

CLAIMS

What is claimed is:

1. A chuck for holding a workpiece comprising:
an outer chuck body having a chuck axis and defining a cavity;
a collar coupled to said outer chuck body and including a slot having a slot axis angled relative to said chuck axis;
an inner chuck body located within said cavity and movable along said chuck axis relative to said collar and outer chuck body, said inner chuck body including a bore having a bore axis angled relative to said chuck axis; and
a jaw rod disposed in said bore and coupled to said collar.
2. The chuck of claim 1 wherein said jaw rod further includes a first end having a jaw, and a second end, wherein said second end is coupled to said collar.
3. The chuck of claim 2 wherein said jaw rod includes a second end having a radial recess and a coupling member, and wherein said slot defines an opening having a width, said radial recess having a diameter less than said width and said coupling member having a maximum diameter greater than said width.
4. The chuck of claim 3 wherein said jaw rod moves between a coupled position and a release position, said radial locator engaging said groove in said coupled position and said coupling member being coupled to said collar in said coupled position.

5. The chuck of claim 2 further including a radial locator and wherein said jaw rod further includes a groove, said radial locator engaging said groove to limit rotation of said jaw relative to said chuck axis.

6. The chuck of claim 1 wherein said bore axis is approximately perpendicular to said slot axis.

7. The chuck of claim 1 wherein as said inner chuck body moves along said chuck axis, said jaw rod moves diagonally relative to said chuck axis, said diagonal movement including a horizontal component generally parallel to said chuck axis and a vertical component generally perpendicular to said chuck axis.

8. The chuck of claim 5 wherein said jaw rod moves a distance along said slot axis, said diagonal movement being approximately equal to said slot axis distance.

9. The chuck of claim 1 wherein said collar is restrained from movement along said chuck axis.

10. A chuck and a workpiece assembly comprising:

a workpiece;

a chuck having jaws coupling said workpiece to said chuck, said chuck including:

an outer body having a cavity and a chuck axis;

an inner body having at least two bores each having a bore axis angled relative each other, said inner body movable between an extended inner body position and a retracted inner body position along said chuck axis and within said cavity;

a collar positioned between said outer body and said inner body, said collar including at least two key slots, each having a slot axis;

at least two jaw rods disposed in said bores and movable between a retracted jaw position and an extended jaw position, said jaw rods including said jaw and a coupling member, said coupling members being coupled to said slots for movement along said slot axes;

wherein as said inner body moves from said extended inner body position to said retracted inner body position, said jaws move from said extended jaw position to said retracted jaw position to couple said workpiece to said chuck.

11. The assembly of claim 10 wherein said collar is restrained from movement along said chuck axis as said inner body is moved from one of said extended and retracted inner body positions to the other of said extended and retracted inner body positions.

12. The assembly of claim 10 wherein each of said bore axes are approximately perpendicular to one of said slot axes.

13. The assembly of claim 10 wherein said chuck further includes a radial locator and said jaw rod includes a groove, said radial locator engaging said groove to rotationally position said jaws relative to said chuck axis.